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Economic Intelligence Memorandum

ANNUAL REVIEW OF INLAND TRANSPORT IN THE SINO-SOVIET BLOC 1959

CIA/RR EM 60-20
20 September 1960

CENTRAL INTELLIGENCE AGENCY

Office of Research and Reports

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FOREWORD

This memorandum is one of a series of annual publications that are designed to present in summary form the significant developments in transportation in the Sino-Soviet Bloc during each preceding calendar year. In addition to the present memorandum on inland transport, the series will include two other annual publications, one on developments in civil aviation in the Sino-Soviet Bloc and another on merchant shipping in the Sino-Soviet Bloc.

This memorandum has been coordinated within this Office but not with other USIB agencies.

CONTENTS

[redacted]

ANNUAL REVIEW OF INLAND TRANSPORT IN THE SINO-SOVIET BLOC*
1959

I. Introduction

The total performance of modern inland transport in the Sino-Soviet Bloc in 1959 amounted to about 2,165 billion ton-kilometers (tkm),** or more than 90 percent of the estimated performance in the US in 1959. Between 1955 and 1959 the inland transport performance of the Bloc, as shown in Table 1,*** increased by 58 percent in terms of ton-kilometers and 79 percent in terms of tons carried.† The highest rate of growth was achieved by Communist China, which registered increases of 175 percent in ton-kilometer performance and more than 260 percent in tons carried.††

During 1959 the growing economy of the USSR continued to demand and to receive more inland transport service, and the general level of freight traffic increased about 10 percent above that in 1958 (see Table 2†††). The share of traffic carried by each mode of transport in terms of ton-kilometers remained virtually unchanged from that in 1958, with the railroads handling about 87 percent of the total traffic.

Negotiations with Free World firms for additions to the transport plant and equipment were carried on at an accelerated pace. Some electric AC locomotives and railroad communications equipment were acquired from France, and further orders are now being filled in France and West Germany. Pipe for gas and petroleum pipelines also was acquired in significant quantities, particularly from West Germany.

About 1,200 kilometers (km) of new railroad lines were commissioned in the USSR in 1959, including the Stalinsk-Abakan sector of the important South Siberian main line. The length of electrified railroads increased by 22 percent and that of dieselized lines by

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* The estimates and conclusions in this memorandum represent the best judgment of this Office as of 1 July 1960.

** Tonnages are given in metric tons throughout this memorandum.

*** P. 26, below.

† The term tons carried as used in this memorandum includes domestic, export, import, and transit traffic.

†† For selected comparative data on modern inland transport in the Sino-Soviet Bloc, see the Appendix, Table 5, p. 30, below.

††† P. 27, below.

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29 percent. In spite of the fact that the Soviet electrification program continued to run ahead of schedule, delays in acquisition of the necessary locomotives or power supply for some lines caused difficulty. Future delays of this nature might become critical as certain lines approach capacity operation.

Highway transport in the USSR remained principally a short-haul operation in 1959. The relative share of tons carried by motor vehicles continued to increase, however, and the continuing consolidation of motor pools resulted in more efficient utilization of vehicles.

Gradual progress was made in 1959 in modernizing the inland water fleet of the USSR and its port and navigational facilities. The inland water fleet carried an increasing traffic load under adverse navigational conditions and experienced a continued decrease in its share of total freight traffic.

Planned construction of pipelines in the USSR lagged somewhat in 1959, and traffic increased at about the same rate as in 1958. Completion of 1,855 km of new pipeline enabled greater volumes of petroleum traffic to be moved at less cost and with a reduced requirement for services from other modes of transport.

The economic growth of the European Satellite countries placed a heavy burden on their inland transportation systems, but there is no evidence that the systems failed to respond to demands for service or in any way inhibited economic growth. During 1959 the railroads, highway transport, and inland water transport performed about 197 billion tkm and carried about 1.99 billion tons (see Table 3*). Throughout the European Satellite area in 1959 the railroads continued to account for the major share of total ton-kilometer performance (88 percent).

In Bulgaria, East Germany, Poland, and Rumania, decreases in rail passenger traffic during 1959 coincided with substantial increases in passenger traffic by highway bus. This trend is significant in that it indicates some success in diverting passenger traffic from the railroads to the highway.

Very little construction of new railroad lines has taken place recently in the European Satellites. Double tracking and electrification of routes with high traffic density, however, are progressing in Czechoslovakia and Poland and, to a lesser degree, in East Germany.

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* P. 28, below.

One of the most important developments in transportation during 1959 was a decision under the auspices of the Council for Mutual Economic Assistance (CEMA) to construct a crude oil pipeline, to be completed in 1963, from the USSR to Poland, East Germany, Czechoslovakia, and Hungary. The pipeline is expected to carry most of the crude oil that is presently moved by rail, thereby reducing requirements for tank cars, locomotives, and other rail services. The Czechoslovak section of the pipeline is to be completed in 1961 and will be able to transport about 5 million tons of crude oil annually, or more than the total of all petroleum and petroleum products carried by the Czechoslovak railroads in 1958.

The continuation of the "leap forward" program in 1959 placed heavy demands on the transportation system of Communist China, which it did not always meet and which in some instances had a retarding effect on economic development. Nevertheless, the Chinese were able to claim record-breaking performances for all forms of inland transport. During 1959, modern forms of inland transport* performed about 316 billion tkm and carried at least 977 million tons of freight (see Table 4**). Primitive forms of transport may have carried another 1.2 billion tons.

The most notable feature of the modern inland transportation system of Communist China in 1959 continued to be the extent to which rail services predominated. Railroads accounted for about 83 percent of inland traffic performance in ton-kilometers. Investment in railroads in 1959 reflected an awareness on the part of the Chinese Communists that a higher level of state investment was necessary to cope with the congested traffic situation that developed in 1958. The import of 950 used steam locomotives from the USSR increased somewhat the capability of the Chinese to move the increasing volume of traffic. Continued progress was achieved on new lines in the southwestern section of the country. The opening of a new Sino-Soviet rail link through Sinkiang came closer to reality in 1959. Construction was completed by the USSR to the Sinkiang border at Gosgranitsa, and the Chinese completed their section as far as Ha-mi.

A major development in highway transport in Communist China in 1959 was the marked emphasis placed on short-distance transport. Junks, carts, porters, and small local improvised railroads provided an indispensable link between producing or consuming areas and the modern transportation system. A significant trend in inland water transport in 1959 was the continued delegation of responsibility for river shipping to provincial navigation departments.

* Railroads, motor trucks, and modern inland water transport.
** P. 29, below.

The organization for the Cooperation of Socialist Railroads (OSShD) continued to function successfully. During 1959 the OSShD prepared a new agreement on international transportation of freight by railroad in the Sino-Soviet Bloc. This agreement prescribes terms and conditions under which international freight traffic will be handled and the exact freight rates for transit freight traffic throughout the Sino-Soviet Bloc. The OSShD also adopted new Soviet Bloc standards for line and rolling stock that will facilitate a more practical interchange of rolling stock among all Bloc countries.

II. USSR

A. Performance

1. Railroads

Freight traffic on Soviet railroads in 1959 increased by 10 percent above the level of 1958 and by 5 percent above the plan. Tons carried were 9 percent above the level of 1958 (see Table 2*) and 3 percent above the plan. The share of traffic performed by electric and diesel traction increased from 26.5 percent in 1958 to 33.5 percent in 1959, exceeding the planned goal of 31.4 percent. Traffic density increased to 11.5 million tkm per route-kilometer compared with 10.7 million in 1958. An increase in the average length of haul to 810 km, compared with 805 km in 1958, resulted at least in part from the large volume of wood shipped from eastern Siberia and of grain shipped from new agricultural lands in the east.

2. Highways

Freight traffic performance by motor transport in the USSR in 1959 was 87.6 billion tkm and 7,361.3 million tons carried. This amount represented a 14-percent increase in traffic above the level of 1958. The average length of motor freight haul remained the same, at 11.9 km.

3. Inland Waterways

Freight traffic on the inland waterways of the USSR, in spite of adverse navigational conditions, increased 9 percent above the level of 1958, to a total of 93.6 billion tkm. Tons carried rose about 8 percent above the level of 1958, to a total of 192.2 million. The average length of freight haul increased to 487 km after remaining constant at about 480 km since 1956.

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* P. 27, below.

4. Pipelines

Petroleum pipelines in the USSR performed 41.7 billion tkm and carried 111.0 million tons in 1959. In terms of ton-kilometers, pipeline transport is showing the most rapid rate of growth of any carrier in the USSR, the 1959 level being about 23 percent above that in 1958. The average length of petroleum haul by pipeline increased by 20 km, to 376 km.

B. Efficiency of Operations

Continued modernization of transport plant and equipment in the USSR resulted in a general increase in the level of operational efficiency in 1959. Costs per ton-kilometer were reduced, while utilization of freight cars, locomotives, vehicles, and ships was generally improved. The labor productivity of transport workers continued to increase. Railroads, for example, increased labor productivity by 9.5 percent while the labor force remained constant. In the fourth quarter of 1959, moreover, there was a reduction of the workday in 8 of the 35 rail systems. Diversion of extremely short-haul traffic from railroad to motor transport continued and also helped in the general improvement of operating efficiency.

Important administrative changes took place in the Ministry of Railroad Transportation of the USSR in 1959. Effective 20 July 1959, the number of railroad systems was reduced from 44 to 35 by incorporating 9 systems (the Amur, Ufa, Orenburg, Ordzhonikidze, Kirov, Pechora, Moscow-Kiev, Moscow Belt, and Moscow-Ryazan' Railroads) into adjoining systems. The changes were said to have been made in the interests of greater efficiency in planning and operations.

C. Inventory of Equipment

1. Railroad Rolling Stock

a. Freight Cars

The USSR in 1959 increased its total inventory of freight cars by about 1.5 percent to an estimated total of 889,000 units. All additions were represented by 4-axle or multiaxle units of higher capacity. Total freight-carrying capacity of the freight car inventory increased by about 6.4 percent, and average capacity per unit increased from 45.6 tons in 1958 to 47.8 tons in 1959. All cars were said to be equipped with automatic brakes and automatic coupling, and about 13,000 cars were equipped with roller bearings. It is estimated that 73 percent of the 1959 freight car inventory was made up of 4-axle or multiaxle units, representing about 90 percent of the total capacity.

b. Locomotives

Acquisition by the Soviet railroads in 1959 of 1,002 diesel locomotive units and about 470 electric locomotive units, including imports of AC types from France, brought the combined inventory of these more modern and efficient types to 5,771 units handling about 33.5 percent of the total rail traffic. Of the 50 French AC locomotives contracted for, 35 were scheduled for delivery in 1959 and 15 in the first quarter of 1960. As of mid-February 1960, about 26 had been delivered. In early 1959 the Soviet government contracted for delivery of 20 AC locomotives from West Germany. No information has been received on fulfillment of this latter contract.

A decline in the volume of ton-kilometers handled by steam traction eliminated the need for more than 2,000 steam locomotives. Some of these were relegated to switching and branch line service, some were retired, and others were exported to Communist China. As a result, the total number of units is estimated to have decreased from 36,000 in 1958 to 34,200 in 1959, although the overall capacity and efficiency of the locomotive inventory was considerably enhanced.

2. Motor Vehicles

The net increase in the inventory of motor vehicles in the USSR in 1959 is estimated to have been about 396,000 vehicles, bringing the total inventory to 3,831,000 vehicles. Of this total, 3,099,000 are estimated to have been trucks or jeeps, 74,000 buses, and 658,000 passenger automobiles. It is estimated that 15 to 18 percent of these vehicles are assigned to the military services. Although current inventory and production are extremely low for such a large country, the lack of suitable roads will minimize the requirement for road vehicles through 1965 at least.

The majority of trucks being produced are of 2.0-ton to 4.5-ton capacity, and the output of light, heavy, and specialized trucks is inadequate. A few more passenger automobiles were produced than in previous years, although their total is still relatively small.

3. Inland Water Fleet

The increase in the inventory of vessels in the Soviet inland water fleet in 1959 is estimated to have been 100,000 horsepower in self-propelled vessels and 600,000 deadweight tons in non-self-propelled vessels, bringing the total self-propelled vessels to 1,766,000 horsepower and the total non-self-propelled vessels to

9.2 million deadweight tons. The fleet is still not adequate to meet the demands made on it. Furthermore, there is always a large percentage of the existing fleet awaiting or undergoing repairs. Shipbuilding facilities have been unable to make repairs on the fleet, construct new ships, and carry out a program that began in 1959 to convert steamships built since 1946 to motor propulsion.

D. Network

1. Railroads

a. New Lines

The 1959 plan called for the addition of 1,215 km of new railroads to the permanent rail network of the Ministry of Railroad Transportation of the USSR and in early January 1960 it was reported that "more than 1,200 km" were added in 1959. This addition extended the total network as of 1 January 1960 to about 124,000 route-kilometers, of which 11,600 are electrified and 14,300 are dieselized.

The longest and most important addition was the 355-km section of the South Siberian Railroad from Stalinsk to Abakan, which was finally put into permanent operation in November 1959, after 20 years of intermittent and difficult construction. The line had been in temporary operation since shortly after tracklaying was completed in December 1957. Construction of the Stalinsk-Abakan line has reduced the short-line haul of freight from the Abakan-Minusinsk region to the Kuznetsk Basin from 1,262 km to 390 km and has provided a badly needed alternate route for some of the traffic that otherwise moves on the heavily utilized Trans-Siberian Railroad. Among other lines added to the permanent rail network of the Ministry of Railroad Transportation in 1959 were the 260-km line running from Peski in Kazakhstan to Utyak in the Urals on the Trans-Siberian Railroad; the 90-km line from Kustanay to Tobol in Kazakhstan, servicing the new Sokolov-Sarbay Ore Mining and Enriching Combine; the 114-km line from Tobol to Dzhetygara, the building site of an asbestos mining enterprise; and the 98-km line from Miass in the Urals to the Uchaly copper deposits. A 99-km stretch in the Karelo-Finnish SSR between Suoyarvi and Lendery also was put into permanent operation in 1959. This line is being built to exploit large timber reserves.

b. Electrification

The Soviet program for electrification of railroads continued to run ahead of schedule in 1959. A total of 2,089 km of route were electrified, compared with a plan of 1,968 km. On the

Moscow-Irkutsk route, 925 km were electrified (Ryazan'-Sasovo, Inza-Syzran', Tayga-Mariinsk, Chernorechenskaya-Klyukvennaya, and Zima-Cheremkhovo). The 275-km Chernorechenskaya-Klyukvennaya stretch represented the first operational use of alternating current for rail electrification in the USSR.

In 1960 it is planned to electrify 2,140 km, including 1,295 km of the 1,567 km which remain to be converted on the Moscow-Irkutsk route.

c. Dieselization

The Soviet press reported that the length of lines converted to diesel traction in 1959 increased from 11,100 to 14,300 km. This increase was apparently an underfulfillment of the plan, reported to be 4,400 km by one source, although an earlier source gave the plan as 3,000 km. In 1960, conversion of another 5,000 km to diesel traction is planned.

d. Automatic Block Signaling and Centralized Traffic Control

About 1,535 km of line were converted to automatic block signaling and centralized traffic control in the USSR in 1959. Specific lines on which automatic block signaling was installed in 1959 include Lyuban'-Spirovo, Petushki-Vladimir, and Krasnogvardeyskay-Milyutinskaya, Installation of centralized traffic control on the Alma-Ata - Chu and Kandagach-Iletsk stretches was completed.

2. Highways

The total route length of the network of highways in the USSR at the end of 1959 was about 1,425,000 km, of which only 246,000 km were surfaced roads, compared with 177,300 km in 1950. About 65,000 km of this network were paved roads,* compared with about 19,000 km in 1950. The low priority given to the development of good roads in the USSR has been one of the consequences of a policy of intensive use of existing facilities with expansion occurring only where absolutely necessary. Because of adverse road conditions, the operating efficiency of motor vehicles often suffers, and motor traffic is practically nonexistent in many areas that could benefit from such service.

* A paved road is one that has been graded and surfaced with either a water-resistant material or a material which facilitates drainage -- that is, concrete or asphalt.

3. Inland Waterways

The total length of potentially navigable rivers in the USSR is estimated to be 527,000 km, of which 135,500 km are actively used for river transport operations. Less than 65 percent of the routes in use are operated by common-carrier steamship lines. In recent years, most new routes have been opened in the Siberian regions where the rivers are least utilized because of short ice-free periods and the difficult navigation conditions.

4. Pipelines

During 1959 the main petroleum pipeline network in the USSR was expanded by 1,855 km, bringing the total length to about 16,400 km. A considerable portion of the new installation was of 28-inch pipe. At the end of 1958, about 60 percent of the network consisted of pipelines with diameters of 14 inches or less. Because of a shortage of pipe, the network has not been expanded as planned. The network is designed primarily for short-haul transport of crude oil from the producing fields to the refineries, most of which are located in the vicinity of the fields.

E. Problems and Prospects

1. Railroads

The railroads of the USSR are allocated only enough capital to allow the system to stay one step ahead of traffic requirements. The result is a near-capacity operation on many lines, and any delay in the application of technological improvements, additional equipment, or installation of new required capacity may cause serious traffic problems.

Steam locomotives, for example, were unable to handle the traffic on the Chernorechenskaya-Klyukvennaya line in the extremely cold winter weather, and, notwithstanding the lack of suitable service facilities, diesel locomotives and crews were brought from other railroads in December 1959 to help out. Insufficient acquisitions of AC locomotives caused diesel locomotives to be still operating on the line in March 1960, more than 2 months after AC electric locomotives started operating there. Soviet domestic production of AC locomotives was below plan, and deliveries of admittedly superior AC locomotives from France were behind schedule. Furthermore, many production defects are complicating the use of Soviet-built AC locomotives. These problems and the increasing traffic on lines being converted to AC operation indicate a continued import of Free World locomotives and temporary, partial operation of completed AC lines with diesel traction.

Construction of new lines as required continues in the USSR as part of the answer to the ever-increasing traffic. In 1960 it is planned to put an additional 1,269 km of new lines in permanent operation. These lines will include the 312-km line from Aktogay in Kazakhstan to the Chinese border at Gosgranitsa, on which tracklaying was completed in June 1959 and on which trains are operating. Another important new addition to the network planned in 1960 is the 389-km stretch from Kulomzino on the Trans-Siberian Railroad west of Omsk through Irtyshskoye to Karasuk. Priority is being given to construction of the Kulomzino-Altayskaya line because of its great importance in relieving the Trans-Siberian Railroad of heavy coal traffic moving west from the Kuznetsk Basin on the Omsk-Novosibirsk stretch. Planned completion in 1963 of the last sector of the South Siberian Railroad from Abakan to Tayshet will provide a more direct alternate routing for a significant volume of Trans-Siberian traffic.

2. Highways

The principal problem facing motor transport in the USSR is the extremely limited highway network, particularly paved roads, and the lack of priority given to the expansion of this network. Much of the existing network is of such poor quality that vehicles operate with low efficiency. Although it is planned that the length of paved roads will increase to about 158,500 km by 1965, the plan may not be fulfilled, judging from past experience. The traffic load will not increase greatly, however, and the highway network will be able to sustain it. The present vehicle inventory has not been suitable for all purposes, because it is made up mainly of medium-size trucks. Vehicle production will concentrate more heavily on trucks of less than 2 tons and more than 5 tons and on special trucks to achieve a more balanced inventory.

3. Inland Waterways

By 1965 the total length of navigable inland water routes in the USSR is expected to be expanded to about 142,000 km. Exploitation of the eastern rivers, concurrent with the projected industrial growth of that area, should account for the greatest share of new routes to be opened. It is planned to increase the load capacity of the self-propelled cargo fleet by 320 percent by both new construction and converting non-self-propelled ships. The relatively small increase in traffic projected for 1965 indicates that growth of the fleet will be limited. The requirement for more efficient diesel propulsion and steel barges, however, appears closer to partial fulfillment. By 1965, motor-propelled ships should represent 84 percent of the total horsepower, compared with about 45 percent in 1958. By 1965, metal barges should account for 92 percent of the non-self-propelled tonnage, compared with 54 percent in 1958.

4. Pipelines

The Soviet pipeline program has been hampered by a shortage of large-diameter steel line pipe. Because requirements have exceeded production, the USSR has turned to the Free World, particularly West Germany, for supplies of this pipe. As much as 250,000 tons of pipe for gas and oil lines were imported from West Germany in 1959. Smaller quantities have been imported from Italy, the UK, Sweden, and Austria. Recently the USSR proposed that France supply pipe worth $160 million in exchange for 1.4 million tons of Soviet petroleum annually for the next 5 years. Annual imports of pipe are expected to remain at least as high as they now are for a number of years.

III. European Satellites

A. Performance

1. Railroads

The railroads of the European Satellites are estimated to have carried 865.6 million tons of freight in 1959. Ton-kilometer performance in 1959 is estimated to have been 172.9 billion tkm (see Table 3*). The railroad system performed about 2.3 million tkm per route-kilometer in 1959, a traffic density slightly less than that of the US in 1959.

2. Highways

Motor truck transport in the European Satellites is estimated to have carried 1,095 million tons of freight in 1959. Ton-kilometer performance in 1959 is estimated to have been 15.7 billion. These two performance figures indicate an average length of haul of only 14.3 km and reflect the limited function of motor truck transport as a local cartage and rail feeder service with very little significance as an intercity carrier of freight. The greatest increases in truck transport performance in terms of tons carried occurred in the least economically developed countries, Bulgaria (54 percent) and Rumania (47 percent). This development suggests that truck transport is supplanting more primitive forms of transport at a rapid rate and that transport service is being provided for a wider area than in the past.

Passenger traffic by motor bus is growing at a rapid rate in all the European Satellite countries as more service is provided

* P. 28, below.

to outlying districts. This growth indicates that the announced intention of diverting rail passenger traffic to the highways is meeting with some success, a development that will enable the railroads to devote additional effort to the more important task of transporting freight.

3. Inland Waterways

Traffic on the inland waterways of the European Satellites in 1959 accounted for only 4 percent of the ton-kilometers and 1 percent of the tons carried by all modes of transport. Performance was 7.3 billion tkm and 25.7 million tons carried. The relatively high average length of haul of 284 km reflects the predominantly international character of inland water traffic.

B. Inventory of Equipment

1. Railroad Rolling Stock

The European Satellites possessed about 624,000 freight cars in 1959, an increase of about 25,000 cars above the estimated inventory in 1958. It is estimated that 28,500 freight cars were produced in 1959, some of which were exported to countries outside the European Satellite area. It is probable, therefore, that a number of freight cars were imported to fill the gap that would normally be created by retirements.

At the beginning of 1959 the European Satellites had 23,000 locomotives of all types, including diesel and electric rail cars used for passenger traffic. This figure represents an increase of about 290 units above the previous year. Czechoslovakia, the only country to report openly, has announced a net addition of 74 units in 1959 -- 17 diesels, 45 electric locomotives, and 31 electric rail cars were added, and 19 steam locomotives were retired. The European Satellites produced about 620 locomotives of all types in 1959, and some of these locomotives were exported.

2. Motor Trucks

The inventory of motor trucks in the European Satellites amounted to about 370,800 units in 1959, an increase of 25,900 units above the level in 1958. Production of motor trucks in the Satellites is estimated to have amounted to 55,000 units in 1959.

C. Network

1. Railroads

At the beginning of 1959 the European Satellites are estimated to have had 76,170 route-kilometers of standard-gauge line and about 6,300 km of narrow-gauge line. There is no evidence of new route construction in 1959, although double tracking and electrification have continued. There is some evidence of a trend toward abandonment of some branch lines with low traffic density. Czechoslovakia reported an increase of 330 km of electrified line in 1958, while Poland reported an increase of about 26 km. Electrification is known to be underway in East Germany and Hungary, but reports of actual progress have not yet become available.

2. Highways

The European Satellites are estimated to have begun 1959 with 582,200 km of roads, of which 61,200 km were improved roads. Road conditions vary in the Satellite countries. The principal routes in Czechoslovakia, East Germany, and Poland appear to be in fair to good condition by Western European standards, but the others are less developed. All the Satellite countries are continuing programs to improve their network of roads.

3. Pipelines

Rumania is the only country in the European Satellite area with a significant pipeline network. The length of the pipeline network in 1958 was 3,140 km, of which 2,380 km were crude oil lines and 760 km were petroleum products lines. The total operating capacity was 12.3 million tons per year for the crude oil lines and 5.3 million tons per year for the petroleum products lines.

D. Problems and Prospects of Individual Countries

1. Poland

Poland is experiencing considerable difficulty in modernizing its railroad system to the extent necessary to meet increased traffic demands. This statement is particularly true of the electrification program. Poland planned to electrify 1,200 km of route by the end of 1960, but at the beginning of 1959 only 670 km had been electrified. Progress during 1959 is not known, but if progress from 1950 through 1958 is a criterion, the program will not be completed in 1960. One of the major reasons for the slow progress has been a lack of funds to purchase equipment and to hire foreign engineers with experience in railroad electrification.

2. Czechoslovakia

The entire transportation system of Czechoslovakia is operating efficiently, with no major problems, and is fully capable of meeting the planned target for 1965. Czechoslovakia is modernizing the railroad system at a rapid rate. During 1958, 330 km of line were electrified, bringing the total of electrified line in 1959 to 605 km, or 4.6 percent of total route-kilometers. During the same year, more than 40 new electric locomotives were placed in service. More than 2,000 freight cars are being added to the inventory yearly, and the percentage of new equipment in the entire inventory is increasing rapidly.

3. East Germany

The East German railroad system, as presently constituted, is used very intensively. Capital investment has been limited, with the result that maintenance of route, renewal of trackage, and the doubling of single-track routes have been delayed. The average age of locomotives and rolling stock is high, resulting in increased liability to breakdowns and a high percentage of equipment under repair. If allowed to continue, the lack of funds unquestionably will result in reduced capability to keep pace with economic growth. Reserve capacity, heretofore emanating from increasingly intensive use of facilities, is all but exhausted, and it has now become essential that additional investments be made in route improvement, new locomotives, and new rolling stock.

Highway transport in East Germany, which functions only as a local cartage and rail feeder service with an average length of haul of 18 km, should be able to contribute in a greater measure to a solution of over-all transportation problems. East Germany has an excellent highway network. There is little evidence, however, that any plans are being made to utilize the potential of highway transport.

4. Hungary

The railroad system of Hungary has the lowest traffic density per kilometer of route of any of the European Satellites except Albania. This fact suggests ample room for improvement in operating efficiency, leading to increased capability in performance. One of the principal problems facing the railroads is the recurring shortage of freight cars, which the Hungarians have attempted to solve by renting and purchasing foreign cars. In 1958 and 1959, Hungary purchased 400 cars from Austria and was negotiating for 500 more. Hungary also entered into a trade agreement with Poland and Rumania for more than 1,000 freight cars. Imports coupled with domestic production ultimately will solve the shortage problem, but not until after 1960.

A second problem is the fact that about 90 percent of the freight traffic is concentrated on 50 percent of the railroad network, indicating that a number of lines are unproductive and unremunerative. Steps are being taken to abandon some branch lines, thereby releasing locomotives, freight cars, and personnel for service on the heavy density routes.

5. Rumania

Rumania is the only European Satellite in which pipeline transport plays a significant role. It is estimated that pipelines transported 4.4 million tons of petroleum and petroleum products in 1959, compared with 3.7 million tons in 1958. The pipelines of Rumania have been restored to approximately their pre-World War II length, and the capacity of the lines has been increased. As Rumania is a major producer of petroleum, it is probable that pipeline performance will increase, as will the pipelines' relative share of the total performance of inland transport, a trend that will relieve the railroads to a large extent.

Plans for modernization of the railroad system appear to have been overambitious or unrealistic when compared with achievement. Rumania has announced that 85 percent of railroad freight traffic would be moved by electric or diesel traction in 1965. The US military attaché returning from Rumania in November 1959 reported that there were no installations indicating progress in the electrification of a single route. With the exception of one diesel passenger train, all traffic observed by the attaché was dependent on steam locomotives.

6. Bulgaria

Bulgaria has planned to electrify certain sections of the railroad system but is experiencing some difficulty in obtaining the necessary equipment. The Bulgarians are negotiating with West Germany for cable, conduction, and signaling equipment. The equipment of the type required is known to be in short supply in the other European Satellites and in the USSR; so it is probable that Bulgaria's electrification program will be delayed.

IV. Communist Far East

A. Communist China

1. Performance

a. Railroads

The railroads of Communist China carried 542 million tons of freight in 1959, an increase of 42.2 percent above performance in 1958. Ton-kilometer performance in 1959 is estimated to have been 263.4 billion tkm, or 42.0 percent above performance in 1958 (see Table 4*). On this basis the railroad system produced about 8.2 million tkm per route-kilometer in 1959, a traffic density almost 3.5 times that of the US but somewhat below that of the USSR.

Although a relative shortage of transportation continued to affect the economic development of Communist China during 1959, the performance of the railroads was generally adequate to handle the demands of the modern industrial sector of the economy. If in 1959 the same relationship existed as in 1950-58 between rail tons carried and production of coal, cement, and ferrous materials, rail tons carried should have amounted to 516 million tons. Thus actual performance was 105 percent of theoretical performance based on production figures from the industrial sector of the economy.

b. Highways

Claimed total highway performance (modern and primitive combined) in Communist China increased by more than 85 percent, to 1.31 billion tons carried in 1959. During the same period, ton-kilometer performance increased by about 80 percent, to more than 18 billion tkm. The greater portions of these increases were realized in primitive transport.

(1) Motor Vehicle Transport

In September 1959 the Chinese Communists revised their claimed figure for tons carried by motor vehicles in 1958 downward from 280 million to 176.3 million tons. A possible explanation for this revision is the fact that fragmentation of control in highway transport resulted originally in inflated performance claims. The figure claimed for tons carried by motor vehicles in 1959 was 344 million tons. At an estimated average length of haul of 35 km, these data indicate about 12 billion tkm. With additions to the motor

* P. 29, below.

truck park almost equal to those of 1958 and with continuing intensive utilization of vehicles, it is possible that the Chinese Communists could have achieved this performance.

(2) Primitive Highway Transport

The performance of primitive highway transport in Communist China may have been about 966 million tons carried in 1959. During the same period, ton-kilometer performance was more than 6 billion tkm. As in 1958, much of this increase probably was realized from improved statistical coverage and the marked emphasis on "short distance" transport in 1959. The impressive achievements of primitive transport during 1959 were apparently not adequate to meet the growing transport needs, however, and late in the year the Chinese Communists placed increased emphasis on "native railroads" as an alternative means of increasing transport capability. Indications are that a major means of increasing short-distance transport performance during 1960 will again be "native railroads."

c. Inland Waterways

The only announcement that the Chinese Communists have made on inland water transport performance in 1959 is a combined performance figure for both river and ocean transportation of 123.2 million tons carried. The inland water share of this total is estimated to be 91.4 million tons.

2. Efficiency of Operations

a. Railroads

During 1959 the railroads of Communist China were apparently operated much more efficiently and with considerably more skill and finesse than in 1958. Congestion developed in important rail centers and probably at border transloading points, particularly in the latter part of 1959, but the situation was much less chaotic than in 1958. Temporary shortages of railroad cars and inadequate line and yard capability both played a role in the congestion that occurred. Although the Chinese press claimed that loading and unloading work had become a weak link in the transportation process, at no time was it necessary to organize great masses of people into loading and unloading teams to assist in rail operations, as in 1958. The Chinese attained decided improvements in every index of operating efficiency and were particularly successful in maintaining in operation higher proportions of the total car park.

b. Highways

The Chinese Communists measure efficiency of operations of motor vehicle transport in ton-kilometer output per ton of rated capacity. In 1958 this index increased by about 48 percent. By the end of 1959 this measure of efficiency had increased to 5,000 tkm, still far short of the stated monthly goal of 10,000 tkm per ton of rated capacity.

The efficiency of primitive transport was increased during 1959, principally through better organization and administration. Other devices used to improve primitive transport performance were food and wage incentives and better coordination of agricultural and transport labor. In November 1959 the Chinese announced that about 7 million persons, 3.5 million primitive vehicles, 0.5 million vessels, and 0.5 million draft animals had been mobilized for short-distance transport. The authorities claimed that the measures used to increase efficiency resulted in moving a volume of freight one-third greater with one-half of the labor force in November 1959, compared with November 1958.

3. Inventory of Equipment

a. Railroad Rolling Stock

During 1959 the Chinese Communist freight car inventory increased by 19 percent, to about 115,000 units. This increase was accounted for almost exclusively from domestic production. A significant development in 1959 was the import by Communist China of 950 used main-line steam locomotives from the USSR. At the end of 1957 the Chinese possessed an estimated park of 3,850 steam locomotives, which had increased by the end of 1959 to 5,550 units as a result of increased production and imports. China probably will import more steam locomotives in the next few years because they are surplus to the USSR, which is engaged in an extensive electrification and dieselization program.

During 1959 the Chinese Communists reportedly produced three diesel locomotives and one electric locomotive for main-line service, although there is some question as to whether all three of the diesels can be used in main-line operations. China will need an increased number of electric locomotives in the near future in order to operate the first electrified section of line in the country, the 94-km Pao-chi - Feng-hsien section of the Pao-chi - Ch'eng-tu line. The requirements for electric locomotives will have to be met primarily by imports. In 1958, China placed an order with the French for 25 electric locomotives, with delivery to be completed during 1960. At

present, there is no indication that any of the 25 locomotives have been delivered.

b. Motor Trucks

During 1959 the estimated civilian motor truck park in Communist China increased to 110,000 trucks, or by about 15 percent. Even though imports probably were sharply curtailed in 1959, it seems probable that higher priority was given to civilian transport requirements than to military needs. The effects of intemperate utilization during 1958 became apparent as the truck park suffered from a serious shortage of spare parts during early 1959. Repair shops were ordered to cease "trial production" of vehicles and to concentrate on maintaining the existing park. The major portion of available funds for highway transport investment was used to expand the truck park during 1959.

4. Network

a. Railroads

During 1959, investment in Communist China was to be directed primarily toward the improvement of the existing network by reconstruction and double tracking and by the addition of branch and special lines. Highest priority in double tracking was given to the Peking-Canton, Tientsin - P'u-k'ou, and Nanking-Shanghai lines, on which the roadbed was completed during 1958. During 1959 the Chinese achieved a total of trunk and branch line construction of 4,609 km, compared with a plan figure of 5,500 km. Presumably a large part of the 4,609 km completed in 1959 was made up of branch and spur lines. Double tracking continued to be stressed, and several important projects were underway. However, no announcements of large segments of double-track line completed were forthcoming. In October 1959, Mao I-sheng, Director of the China Railroad Research Institute, indicated that the railroads in service in China had a total length of more than 32,000 km, almost 3 percent above the length of total rail line in operation at the end of 1958.

b. Highways

The highway network of Communist China increased by 80,000 km in 1959. A large part of this increase resulted from a reclassification of "simple" highways to Class VI-B highways.* China's 480,000 km of highway are inferior by Free World standards, and no substantial qualitative improvements are anticipated as long as motor vehicles retain priority for investment funds.

* One-lane, fair-weather, unsurfaced roads.

c. Inland Waterways

In 1959 the navigable inland waterway network of Communist China increased by 10,000 km, to a total of 160,000 km. Restoration work continued on the Grand Canal, and improvement of the Yellow River and the Chia-ling Chiang also took place. In addition, some dredging and improvement occurred on almost all river systems. No basis exists, however, for estimating the total results of river development and water conservancy programs in 1959.

d. Pipelines

In January 1959 the Chinese Communists announced the completion of the first trunk pipeline in China. This line, which is 147 km long and has a daily capacity of 1,200 tons of crude oil, runs from the Karamai oilfield to the Tu-shan-tzu refinery in western Sinkiang Province.

5. Problems and Prospects

Early in January 1960, Vice Premier Li Fu-chun stated that railroad construction would be the most important transportation task in Communist China in 1960 and that the number of trunk and branch railroad lines to be built in 1960 would be more than in any previous year. Investment in railroads in 1960 is to increase by 41 percent, compared with 75 percent in 1959. The plan for 1960 also provides for the railroad system to carry about one-third more freight than in 1959. Additional rolling stock -- 32,000 freight cars and 800 locomotives -- is to be produced. During 1960-70, continued increases in the performance of the Chinese railroads can be achieved only by similar annual increases in the freight car and locomotive parks rather than by further improvements in operating efficiency. It also will be necessary for the Chinese to continue investment in construction of new lines and in production of rolling stock at least at the rate for 1960 for a number of years in order to keep up with the increasing demand for transportation service.

Highway transport in Communist China has expanded at a slightly faster rate than other modes of transport, a trend that may continue until 1962 or 1963. The highway network probably will expand at a slower rate with emphasis on feeder roads to the existing network. The truck park will continue to expand, and some standardization will be effected by increased production of Liberation trucks. The major portion of investment funds probably will continue to be allocated first to the truck park and second to the highway network. It is not anticipated, however, that the long-haul common-carrier type

of operations, such as those in the US, will be possible in China for many years.

The problems that occurred on the inland waterway system of Communist China in 1959 -- inadequate port facilities, inability of land transport to move the goods away from the ports, shortages of fuel, and a high accident rate -- are all likely to continue. Shortages of petroleum in 1959 forced the Chinese to change some vessels under construction from petroleum to coal as a source of power. Although the Chinese are aware of these problems and are making attempts to solve them, no immediate improvement in the situation is anticipated.

B. North Korea

1. Performance

Performance by the modern transport system* of North Korea increased more rapidly during 1959 than in any year since 1955, when recovery from the Korean War was practically completed. After returning to the prewar (1949) level of ton-kilometer performance in 1955, freight transport performance has continued to grow at an increasing rate. During 1959, performance reportedly increased to 8.2 billion tkm and 66.7 million tons carried, increases of 25 percent and 40 percent, respectively, above the level of 1958. The transportation system has been adequate to meet the demands made on it and can be expected to expand further at a rapid rate. Past increases in performance have been due mainly to improvements in the road and railroad networks and in operating efficiency, and future increases probably will come mainly from increases in the inventory of equipment.

During 1959 the railroad system continued to account for more than 95 percent of total ton-kilometer performance. The railroads, however, carried about 53 percent of the tonnage. Motor vehicle freight traffic expanded far more rapidly than that of other modes of transport. Performance during 1959 was reported to have reached 291 million tkm and 29 million tons carried, increases of 43 and 65 percent, respectively, above the levels of 1958. Accordingly, highway transport carried 43 percent of the modern transport tonnage in 1959, compared with about 8 percent in 1949. Increases in motor truck performance apparently have been achieved by expansion and improvement of the road network, by increases in inventory, and by improvement in operating efficiency.

* A separate estimate of performance by inland water transport apart from coastal water transport is not available. Although inland water transport is being expanded, its performance will remain an insignificant portion of total performance by modern transport.

2. Problems and Prospects

The major problem in railroad transport in North Korea has been that of maintenance of equipment, particularly of locomotives, although this problem has been partly solved in recent years, primarily by imports from at least five different countries of the Sino-Soviet Bloc. In highway transport the major problem has been lack of fuel, which must be imported. At present a campaign is underway to convert all trucks to use indigenous fuels. Lack of fuel may account in part for a low utilization rate, which the North Koreans were attempting to improve during 1959.

The railroads will continue to be the main carrier in North Korea. Although there will be continued improvement in operating efficiency by both the railroads and motor vehicles, enlarged inventories of equipment probably will significantly increase performance. North Korea has the capability of producing railroad cars at present and will develop the capability to produce motor vehicles in the near future. Fuel for motor vehicles will continue to be a problem.

C. North Vietnam

1. Performance

During 1959 the performance of the inland transport system of North Vietnam reportedly amounted to about 809 million tkm. Performance of the railroads increased by 72 percent, to 504 million tkm. Performance of truck transport was 80 million tkm, and that of the inland waterways was 225 million tkm.

2. Network

By 1958 the railroad network of North Vietnam was essentially restored to its length in the period before the Viet Minh revolution, and since that time no major additions have been made. During 1959 the North Vietnamese continued slowly to reconstruct the rail line south from Thanh Hoa toward Vinh with some emphasis on the reconstruction of bridges. A major development in 1959 was the announcement that construction was started in July on a 120-km rail line from Dong Anh (just north of Hanoi) to the steel complex under construction at Thai Nguyen. Although the line is temporarily being constructed to meter gauge, plans call for eventual conversion to standard gauge and extension of the line north. This plan again lends credence to reports that the North Vietnam system eventually will be converted to standard gauge. This conversion could be slow, however, as Chinese interest may wane when the railroad system of Yunnan is linked to the Chinese system by lines currently under construction within China.

3. Problems and Prospects

The major problems of the railroad system of North Vietnam include the limited capacity of the system because of its meter gauge, a lack of repair capability, the necessity of importing any additions to the rail inventory, and a lack of trained personnel. The quality of the network probably also poses some problems, especially with regard to bridges.

Highway transport suffers from a shortage of trucks, a poor road network, limited repair capability, shortages of liquid fuel, and a lack of trained personnel. Because there appears to be unutilized transport capability in the truck park, the road network and shortages of fuel and repair capability may pose the major problems. The road network probably has not yet regained its quality of the period before the Viet Minh revolution, and a number of bridges remain to be reconstructed.

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APPENDIX

STATISTICAL TABLES

Table 1

Sino-Soviet Bloc: Estimated Freight Traffic Performance of Modern Inland Transport a/ 1955-59

Area	1955	1956	1957	1958	1959
	Billion Ton-Kilometers				
USSR	1,095.8	1,218.6	1,377.5	1,498.1	1,652.4
European Satellites	156.6	161.8	176.6	185.3	196.8
Communist China	114.9	140.7	158.6	217.6	315.6
Total	1,367.3	1,521.1	1,712.7	1,901.0	2,164.8
	Million Tons Carried b/				
USSR	5,188.2	5,784.3	6,944.2	8,364.5	9,428.3
European Satellites	1,457.2	1,540.0	1,693.9	1,814.2	1,990.5
Communist China	269.4	361.2	398.4	614.0	977.4
Total c/	6,914.8	7,685.5	9,036.5	10,792.7	12,396.2

a. Including the performance of railroads, motor trucks, and the inland water fleet in the USSR, the European Satellites, and Communist China and including the performance of pipelines in the USSR and Rumania only. Performance figures for North Korea and North Vietnam are not included.

b. Including domestic, export, import, and transit traffic.

c. In addition to the duplication of tonnage created when traffic is carried by more than one mode of transport, this total also includes duplication of foreign trade traffic moving in countries of the Sino-Soviet Bloc.

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Table 2

USSR: Estimated Freight Traffic Performance of Modern Inland Transport 1955-59

Mode of Transport	1955	1956	1957	1958	1959
	Billion Ton-Kilometers				
Railroads	970.9	1,079.1	1,212.8	1,302.0	1,429.5
Motor vehicles	42.5	48.5	61.7	76.8	87.6
Inland water fleet	67.7	70.5	76.4	85.5	93.6
Pipelines	14.7	20.5	26.6	33.8	41.7
Total	1,095.8	1,218.6	1,377.5	1,498.1	1,652.4
	Million Tons Carried a/				
Railroads	1,267.0	1,371.0	1,487.7	1,616.9	1,763.8
Motor vehicles	3,730.0	4,200.9	5,216.4	6,474.4	7,361.3
Inland water fleet	139.5	147.1	159.2	178.3	192.2
Pipelines	51.7	65.3	80.9	94.9	111.0
Total b/	5,188.2	5,784.3	6,944.2	8,364.5	9,428.3

a. Including domestic, export, import, and transit traffic.
b. This total reflects duplication of tonnage when traffic is carried by more than one mode of transport.

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Table 3

European Satellites: Estimated Freight Traffic Performance of Modern Inland Transport 1955-59

Mode of Transport	1955	1956	1957	1958	1959
	Billion Ton-Kilometers				
Railroads	139.4	143.9	156.5	163.7	172.9
Motor vehicles	10.6	11.5	12.9	14.1	15.7
Inland water fleet	6.2	5.9	6.5	6.7	7.3
Pipelines a/	0.4	0.5	0.7	0.8	0.9
Total	156.6	161.8	176.6	185.3	196.8
	Million Tons Carried b/				
Railroads	722.3	734.7	780.1	811.2	865.6
Motor vehicles	709.6	780.8	886.4	974.1	1,094.8
Inland water fleet	23.3	22.4	24.0	25.2	25.7
Pipelines a/	2.0	2.1	3.4	3.7	4.4
Total c/	1,457.2	1,540.0	1,693.9	1,814.2	1,990.5

a. Rumania only.
b. Including domestic, export, import, and transit traffic.
c. This total reflects duplication of tonnage when traffic is carried by more than one mode of transport.

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Table 4

Communist China: Estimated Freight Traffic Performance of Modern Inland Transport 1955-59

Mode of Transport	1955	1956	1957	1958	1959
	Billion Ton-Kilometers				
Railroads	98.15	120.35	134.59	185.52	263.40
Motor vehicles	2.52	3.49	3.94	6.96	12.00
Inland water fleet	14.25	16.90	20.12	25.07	40.20
Total	114.92	140.74	158.65	217.55	315.60
	Million Tons Carried a/				
Railroads	193.76	246.05	274.20	381.09	542.00
Motor vehicles	48.96	79.13	83.73	176.30	344.00
Inland water fleet	26.67	35.97	40.49	56.66	91.40
Total b/	269.39	361.15	398.42	614.05	977.40

a. Including domestic, export, import, and transit traffic.
b. This total reflects duplication of tonnage when traffic is carried by more than one mode of transport.

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Table 5

USSR, European Satellites, and Communist China
Selected Comparative Data on Modern Inland Transport
1959

Mode of Transport and Unit	USSR		European Satellites		Communist China		Total	
	Amount	Percent of Total	Amount	Percent of Total	Amount	Percent of Total	Amount	Percent
Total modern transport a/								
Ton-kilometers (billion)	1,652.4	76	196.8	9	315.6	15	2,164.8	100
Tons carried b/ (million)	9,428.3	76	1,990.5	16	977.4	8	12,396.2	100
Railroads								
Ton-kilometers (billion)	1,429.5	77	172.9	9	263.4	14	1,865.8	100
Tons carried b/ (million)	1,763.8	56	865.6	27	542.0	17	3,171.4	100
Route-kilometers	124,000	53	76,170	33	32,000	14	232,170	100
Locomotives	34,200	54	23,000 c/	37	5,550	9	62,750	100
Freight cars	889,000	55	624,000	38	115,000	7	1,628,000	100
Highway transport								
Ton-kilometers (billion)	87.6	76	15.7	14	12.0	10	115.3	100
Tons carried b/ (million)	7,361.3	84	1,094.8	12	344.0	4	8,800.1	100
Route-kilometers	1,425,000	57	582,200	24	480,000	19	2,487,200	100
Kilometers of surfaced road	246,000		61,200		N.A.		N.A.	
Trucks d/	2,400,000	83	370,800	13	110,000	4	2,880,800	100
Inland water transport								
Ton-kilometers (billion)	93.6	67	7.3 e/	5	40.2	28	141.1	100
Tons carried b/ (million)	192.2	62	25.7 e/	8	91.4	30	309.3	100
Route-kilometers in active use	135,500		7,940 f/		160,000 g/		303,440	
Pipelines								
Ton-kilometers (billion)	41.7	98	0.9 h/	2	Negligible		42.6	100
Tons carried b/ (million)	111.0	96	4.4 h/	4	Negligible		115.4	100
Route-kilometers	16,400	84	3,140 h/	16	Negligible		19,540	100

a. Including the performance of railroads, motor trucks, and inland waterways in the USSR, the European Satellites, and Communist China. Performance of pipelines only in the USSR and Rumania is included. Performance figures for North Korea and North Vietnam are not included.
b. Including domestic, export, import, and transit traffic.
c. 1958 data.
d. Civilian trucks only.
e. Including performance on inland waterways in Western Europe.
f. Including route-kilometrage of the Elbe River in Western Europe and of the total navigable length of the Danube River.
g. Including route-kilometrage used by both modern and primitive transport. Only 40,000 km are navigable by powered vessels.
h. Rumania only.

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